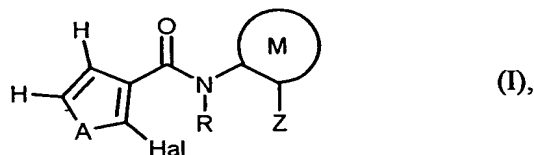


**Patent Claims**

## 1. 2-Halofuryl/thienyl-3-carboxamides of the formula (I)



5 in which

A represents O (oxygen) or S (sulphur),

Hal represents halogen,

10 R represents hydrogen, C<sub>1</sub>-C<sub>8</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-alkylsulphinyl, C<sub>1</sub>-C<sub>6</sub>-alkylsulphonyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy-C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>3</sub>-C<sub>8</sub>-cycloalkyl; C<sub>1</sub>-C<sub>6</sub>-haloalkyl, C<sub>1</sub>-C<sub>4</sub>-haloalkylthio, C<sub>1</sub>-C<sub>4</sub>-haloalkylsulphinyl, C<sub>1</sub>-C<sub>4</sub>-haloalkylsulphonyl, halo-C<sub>1</sub>-C<sub>4</sub>-alkoxy-C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>3</sub>-C<sub>8</sub>-halocycloalkyl having in each case 1 to 9 fluorine, chlorine and/or bromine atoms; formyl, formyl-C<sub>1</sub>-C<sub>3</sub>-alkyl, (C<sub>1</sub>-C<sub>3</sub>-alkyl)carbonyl-C<sub>1</sub>-C<sub>3</sub>-alkyl, (C<sub>1</sub>-C<sub>3</sub>-alkoxy)carbonyl-C<sub>1</sub>-C<sub>3</sub>-alkyl; halo-(C<sub>1</sub>-C<sub>3</sub>-alkyl)carbonyl-C<sub>1</sub>-C<sub>3</sub>-alkyl, halo-(C<sub>1</sub>-C<sub>3</sub>-alkoxy)carbonyl-C<sub>1</sub>-C<sub>3</sub>-alkyl having in each case 1 to 13 fluorine, chlorine and/or bromine atoms;

15 (C<sub>1</sub>-C<sub>8</sub>-alkyl)carbonyl, (C<sub>1</sub>-C<sub>8</sub>-alkoxy)carbonyl, (C<sub>1</sub>-C<sub>4</sub>-alkoxy-C<sub>1</sub>-C<sub>4</sub>-alkyl)carbonyl, (C<sub>3</sub>-C<sub>8</sub>-cycloalkyl)carbonyl; (C<sub>1</sub>-C<sub>6</sub>-haloalkyl)carbonyl, (C<sub>1</sub>-C<sub>6</sub>-haloalkoxy)carbonyl, (halo-C<sub>1</sub>-C<sub>4</sub>-alkoxy-C<sub>1</sub>-C<sub>4</sub>-alkyl)carbonyl, (C<sub>3</sub>-C<sub>8</sub>-halocycloalkyl)carbonyl having in each case 1 to 9 fluorine, chlorine and/or bromine atoms; or -C(=O)C(=O)R<sup>1</sup>, -CONR<sup>2</sup>R<sup>3</sup> or -CH<sub>2</sub>NR<sup>4</sup>R<sup>5</sup>,

20 R<sup>1</sup> represents hydrogen, C<sub>1</sub>-C<sub>8</sub>-alkyl, C<sub>1</sub>-C<sub>8</sub>-alkoxy, C<sub>1</sub>-C<sub>4</sub>-alkoxy-C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>3</sub>-C<sub>8</sub>-cycloalkyl; C<sub>1</sub>-C<sub>6</sub>-haloalkyl, C<sub>1</sub>-C<sub>6</sub>-haloalkoxy, halo-C<sub>1</sub>-C<sub>4</sub>-alkoxy-C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>3</sub>-C<sub>8</sub>-halocycloalkyl having in each case 1 to 9 fluorine, chlorine and/or bromine atoms,

25 R<sup>2</sup> and R<sup>3</sup> independently of one another each represent hydrogen, C<sub>1</sub>-C<sub>8</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy-C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>3</sub>-C<sub>8</sub>-cycloalkyl; C<sub>1</sub>-C<sub>6</sub>-haloalkyl, halo-C<sub>1</sub>-C<sub>4</sub>-alkoxy-C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>3</sub>-C<sub>8</sub>-halocycloalkyl having in each case 1 to 9 fluorine, chlorine and/or bromine atoms,

30 R<sup>2</sup> and R<sup>3</sup> furthermore together with the nitrogen atom to which they are attached form a saturated heterocycle having 5 to 8 ring atoms which is optionally mono- or polysubstituted by identical or different substituents from the group consisting of halogen and C<sub>1</sub>-C<sub>4</sub>-alkyl, where the heterocycle may contain one or two further non-adjacent heteroatoms from the group consisting of oxygen, sulphur and NR<sup>6</sup>,

$R^4$  and  $R^5$  independently of one another represent hydrogen,  $C_1$ - $C_8$ -alkyl,  $C_3$ - $C_8$ -cycloalkyl;  $C_1$ - $C_8$ -haloalkyl,  $C_3$ - $C_8$ -halocycloalkyl having in each case 1 to 9 fluorine, chlorine and/or bromine atoms,

$R^4$  and  $R^5$  furthermore together with the nitrogen atom to which they are attached form a saturated heterocycle having 5 to 8 ring atoms which is optionally mono- or polysubstituted by identical or different substituents from the group consisting of halogen and  $C_1$ - $C_4$ -alkyl, where the heterocycle may contain 1 or 2 further non-adjacent heteroatoms from the group consisting of oxygen, sulphur and  $NR^6$ ,

$R^6$  represents hydrogen or  $C_1$ - $C_6$ -alkyl,

M represents a phenyl, thiophene, pyridine, pyrimidine, pyridazine or pyrazine ring, each of which is monosubstituted by  $R^7$ , or represents a thiazole ring substituted by  $R^{7-A}$ ,

$R^7$  represents hydrogen, fluorine, chlorine, methyl, isopropyl, methylthio or trifluoromethyl,

$R^{7-A}$  represents hydrogen, methyl, methylthio or trifluoromethyl,

Z represents  $Z^1$ ,  $Z^2$ ,  $Z^3$  or  $Z^4$ , in which

$Z^1$  represents phenyl which is optionally mono- to pentasubstituted by identical or different substituents,

$Z^2$  represents bicycloalkyl or cycloalkyl which is optionally mono- or polysubstituted by identical or different substituents,

$Z^3$  represents unsubstituted  $C_2$ - $C_{20}$ -alkyl or represents  $C_1$ - $C_{20}$ -alkyl which is mono- or polysubstituted by identical or different substituents from the group consisting of halogen, alkylthio, alkylsulphinyl, alkylsulphonyl, alkoxy, alkylamino, dialkylamino, haloalkylthio, haloalkylsulphinyl, haloalkylsulphonyl, haloalkoxy, haloalkylamino, halodialkylamino,  $-SiR^8R^9R^{10}$  and  $C_3$ - $C_6$ -cycloalkyl, where the cycloalkyl moiety for its part may optionally be mono- or polysubstituted by identical or different substituents from the group consisting of halogen and  $C_1$ - $C_4$ -alkyl,

$Z^4$  represents  $C_2$ - $C_{20}$ -alkenyl or  $C_2$ - $C_{20}$ -alkynyl, each of which is optionally mono- or polysubstituted by identical or different substituents from the group consisting of halogen, alkylthio, alkylsulphinyl, alkylsulphonyl, alkoxy, alkylamino, dialkylamino, haloalkylthio, haloalkylsulphinyl, haloalkylsulphonyl, haloalkoxy, haloalkylamino, halo-dialkylamino,  $-SiR^8R^9R^{10}$  and  $C_3$ - $C_6$ -cycloalkyl, where the cycloalkyl moiety for its part may optionally be mono- or polysubstituted by identical or different substituents from the group consisting of halogen and  $C_1$ - $C_4$ -alkyl,

$R^8$  and  $R^9$  independently of one another represent hydrogen,  $C_1$ - $C_8$ -alkyl,  $C_1$ - $C_8$ -alkoxy,  $C_1$ - $C_4$ -alkoxy- $C_1$ - $C_4$ -alkyl,  $C_1$ - $C_4$ -alkylthio- $C_1$ - $C_4$ -alkyl or  $C_1$ - $C_6$ -haloalkyl,

R<sup>10</sup> represents hydrogen, C<sub>1</sub>-C<sub>8</sub>-alkyl, C<sub>1</sub>-C<sub>8</sub>-alkoxy, C<sub>1</sub>-C<sub>4</sub>-alkoxy-C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkylthio-C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>2</sub>-C<sub>8</sub>-alkenyl, C<sub>2</sub>-C<sub>8</sub>-alkynyl, C<sub>1</sub>-C<sub>6</sub>-haloalkyl, C<sub>2</sub>-C<sub>6</sub>-haloalkenyl, C<sub>2</sub>-C<sub>6</sub>-haloalkynyl, C<sub>3</sub>-C<sub>6</sub>-cycloalkyl, or represents in each case optionally substituted phenyl or phenylalkyl,

5 or

M and Z together represent 1H-2,3-dihydroinden-4-yl, 1,3-dihydro-2-benzofuran-4-yl or 1,3-dihydro-2-benzothien-4-yl, each of which is optionally mono- to trisubstituted by methyl.

10 2. 2-Halofuryl/thienyl-3-carboxamides of the formula (I) according to Claim 1 in which

A represents O (oxygen) or S (sulphur),

Hal represents fluorine, chlorine, bromine or iodine,

15 R represents hydrogen, C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkylsulphinyl, C<sub>1</sub>-C<sub>4</sub>-alkylsulphonyl, C<sub>1</sub>-C<sub>3</sub>-alkoxy-C<sub>1</sub>-C<sub>3</sub>-alkyl, C<sub>3</sub>-C<sub>6</sub>-cycloalkyl; C<sub>1</sub>-C<sub>4</sub>-haloalkyl, C<sub>1</sub>-C<sub>4</sub>-haloalkylthio, C<sub>1</sub>-C<sub>4</sub>-haloalkylsulphinyl, C<sub>1</sub>-C<sub>4</sub>-haloalkylsulphonyl, halo-C<sub>1</sub>-C<sub>3</sub>-alkoxy-C<sub>1</sub>-C<sub>3</sub>-alkyl, C<sub>3</sub>-C<sub>8</sub>-halocycloalkyl having in each case 1 to 9 fluorine, chlorine-and/or bromine atoms; formyl, formyl-C<sub>1</sub>-C<sub>3</sub>-alkyl, (C<sub>1</sub>-C<sub>3</sub>-alkyl)carbonyl-C<sub>1</sub>-C<sub>3</sub>-alkyl, (C<sub>1</sub>-C<sub>3</sub>-alkoxy)carbonyl-C<sub>1</sub>-C<sub>3</sub>-alkyl; halo-(C<sub>1</sub>-C<sub>3</sub>-alkyl)carbonyl-C<sub>1</sub>-C<sub>3</sub>-alkyl, halo-(C<sub>1</sub>-C<sub>3</sub>-alkoxy)carbonyl-C<sub>1</sub>-C<sub>3</sub>-alkyl having in each case 1 to 13 fluorine, chlorine-and/or bromine atoms;

20 (C<sub>1</sub>-C<sub>6</sub>-alkyl)carbonyl, (C<sub>1</sub>-C<sub>4</sub>-alkoxy)carbonyl, (C<sub>1</sub>-C<sub>3</sub>-alkoxy-C<sub>1</sub>-C<sub>3</sub>-alkyl)carbonyl, (C<sub>3</sub>-C<sub>6</sub>-cycloalkyl)carbonyl; (C<sub>1</sub>-C<sub>4</sub>-haloalkyl)carbonyl, (C<sub>1</sub>-C<sub>4</sub>-haloalkoxy)carbonyl, (halo-C<sub>1</sub>-C<sub>3</sub>-alkoxy-C<sub>1</sub>-C<sub>3</sub>-alkyl)carbonyl, (C<sub>3</sub>-C<sub>6</sub>-halocycloalkyl)carbonyl having in each case 1 to 9 fluorine, chlorine and/or bromine atoms, or -C(=O)C(=O)R<sup>1</sup>, -CONR<sup>2</sup>R<sup>3</sup> or -CH<sub>2</sub>NR<sup>4</sup>R<sup>5</sup>,

25 R<sup>1</sup> represents hydrogen, C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, C<sub>1</sub>-C<sub>3</sub>-alkoxy-C<sub>1</sub>-C<sub>3</sub>-alkyl, C<sub>3</sub>-C<sub>6</sub>-cycloalkyl; C<sub>1</sub>-C<sub>4</sub>-haloalkyl, C<sub>1</sub>-C<sub>4</sub>-haloalkoxy, halo-C<sub>1</sub>-C<sub>3</sub>-alkoxy-C<sub>1</sub>-C<sub>3</sub>-alkyl, C<sub>3</sub>-C<sub>6</sub>-halocycloalkyl having in each case 1 to 9 fluorine, chlorine and/or bromine atoms,

30 R<sup>2</sup> and R<sup>3</sup> independently of one another each represent hydrogen, C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>3</sub>-alkoxy-C<sub>1</sub>-C<sub>3</sub>-alkyl, C<sub>3</sub>-C<sub>6</sub>-cycloalkyl; C<sub>1</sub>-C<sub>4</sub>-haloalkyl, halo-C<sub>1</sub>-C<sub>3</sub>-alkoxy-C<sub>1</sub>-C<sub>3</sub>-alkyl, C<sub>3</sub>-C<sub>6</sub>-halocycloalkyl having in each case 1 to 9 fluorine, chlorine and/or bromine atoms,

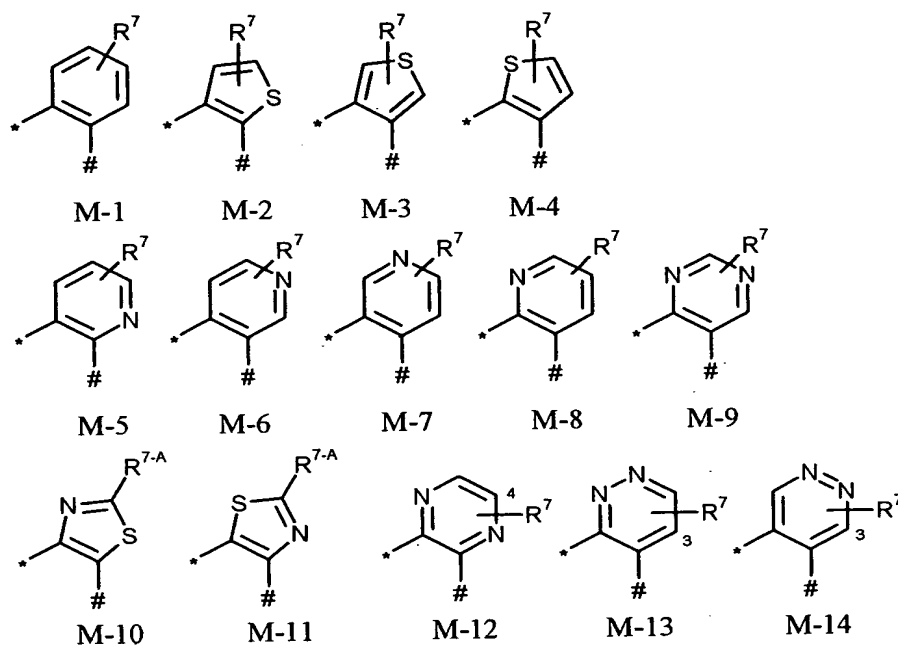
35 R<sup>2</sup> and R<sup>3</sup> furthermore together with the nitrogen atom to which they are attached form a saturated heterocycle having 5 or 6 ring atoms which is optionally mono- to tetrasubstituted by identical or different substituents from the group consisting of halogen and C<sub>1</sub>-C<sub>4</sub>-alkyl, where the heterocycle may contain 1 or 2 further non-adjacent heteroatoms from the group consisting of oxygen, sulphur and NR<sup>6</sup>,

$R^4$  and  $R^5$  independently of one another represent hydrogen,  $C_1$ - $C_6$ -alkyl,  $C_3$ - $C_6$ -cycloalkyl;  $C_1$ - $C_4$ -haloalkyl,  $C_3$ - $C_6$ -halocycloalkyl having in each case 1 to 9 fluorine, chlorine and/or bromine atoms,

$R^4$  and  $R^5$  furthermore together with the nitrogen atom to which they are attached form a saturated heterocycle having 5 or 6 ring atoms which is optionally mono- or polysubstituted by identical or different substituents from the group consisting of halogen and  $C_1$ - $C_4$ -alkyl, where the heterocycle may contain 1 or 2 further non-adjacent heteroatoms from the group consisting of oxygen, sulphur and  $NR^6$ ,

$R^6$  represents hydrogen or  $C_1$ - $C_4$ -alkyl,

M represents one of the cycles below,



where the bond marked "\*" is attached to the amide and the bond marked "#" is attached to the radical Z,

$R^7$  represents hydrogen, fluorine, chlorine, methyl, isopropyl, methylthio or trifluoromethyl,

$R^{7-A}$  represents hydrogen, methyl or trifluoromethyl,

Z represents  $Z^1$ ,  $Z^2$ ,  $Z^3$  or  $Z^4$ , where

$Z^1$  represents phenyl which is optionally mono- to pentasubstituted by identical or different substituents, the substituents in each case being selected from the list  $W^1$ ,

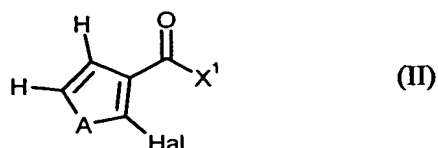
$W^1$  represents halogen, cyano, nitro, amino, hydroxyl, formyl, carboxy, carbamoyl, thio-carbamoyl;

- in each case straight-chain or branched alkyl, hydroxyalkyl, oxoalkyl, alkoxy, alkoxyalkyl, alkylthioalkyl, dialkoxyalkyl, alkylthio, alkylsulphinyl or alkylsulphonyl having in each case 1 to 8 carbon atoms;
- in each case straight-chain or branched alkenyl or alkenyloxy having in each case 2 to 6 carbon atoms;
- in each case straight-chain or branched haloalkyl, haloalkoxy, haloalkylthio, haloalkylsulphinyl or haloalkylsulphonyl having in each case 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms;
- in each case straight-chain or branched haloalkenyl or haloalkenyloxy having in each case 2 to 6 carbon atoms and 1 to 11 identical or different halogen atoms;
- in each case straight-chain or branched alkylamino, dialkylamino, alkylcarbonyl, alkylcarbonyloxy, alkoxycarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, arylalkylaminocarbonyl, dialkylaminocarbonyloxy having 1 to 6 carbon atoms in the respective hydrocarbon chains, alkenylcarbonyl or alkynylcarbonyl having 2 to 6 carbon atoms in the respective hydrocarbon chains;
- cycloalkyl or cycloalkyloxy having in each case 3 to 6 carbon atoms;
- doubly attached alkylene having 3 or 4 carbon atoms, oxyalkylene having 2 or 3 carbon atoms or dioxyalkylene having 1 or 2 carbon atoms, each of which is optionally mono- to tetrasubstituted by identical or different substituents from the group consisting of fluorine, chlorine, oxo, methyl, trifluoromethyl and ethyl;
- or the grouping  $-C(Q^1)=N-Q^2$  in which
- $Q^1$  represents hydrogen, hydroxyl or alkyl having 1 to 4 carbon atoms, haloalkyl having 1 to 4 carbon atoms and 1 to 9 fluorine, chlorine and/or bromine atoms or cycloalkyl having 1 to 6 carbon atoms and
- $Q^2$  represents hydroxyl, amino, methylamino, phenyl, benzyl or represents in each case optionally cyano-, hydroxyl-, alkoxy-, alkylthio-, alkylamino-, dialkylamino- or phenyl-substituted alkyl or alkoxy having 1 to 4 carbon atoms, or represents alkenyloxy or alkynyloxy having in each case 2 to 4 carbon atoms,
- and also phenyl, phenoxy, phenylthio, benzoyl, benzoylphenyl, cinnamoyl, heterocyclyl or phenylalkyl, phenylalkyloxy, phenylalkylthio or heterocyclylalkyl having in each case 1 to 3 carbon atoms in the respective alkyl moieties, each of which radicals is optionally mono- to trisubstituted in the cyclic moiety by halogen and/or straight-chain or branched alkyl or alkoxy having 1 to 4 carbon atoms,

- $Z^2$  represents cycloalkyl or bicycloalkyl having in each case 3 to 10 carbon atoms and being in each case optionally mono- to tetrasubstituted by identical or different substituents from the group consisting of halogen and/or  $C_1$ - $C_4$ -alkyl,
- $Z^3$  represents unsubstituted  $C_2$ - $C_{20}$ -alkyl or  $C_1$ - $C_{20}$ -alkyl which is mono- or polysubstituted by identical or different substituents from the group consisting of fluorine, chlorine, bromine, iodine,  $C_1$ - $C_6$ -alkylthio,  $C_1$ - $C_6$ -alkylsulphanyl,  $C_1$ - $C_6$ -alkylsulphonyl,  $C_1$ - $C_6$ -alkoxy,  $C_1$ - $C_6$ -alkylamino, di( $C_1$ - $C_6$ -alkyl)amino,  $C_1$ - $C_6$ -haloalkylthio,  $C_1$ - $C_6$ -haloalkylsulphanyl,  $C_1$ - $C_6$ -haloalkylsulphonyl,  $C_1$ - $C_6$ -haloalkoxy,  $C_1$ - $C_6$ -haloalkylamino, halo-di( $C_1$ - $C_6$ -alkyl)amino,  $-SiR^8R^9R^{10}$  and  $C_3$ - $C_6$ -cycloalkyl, where the cycloalkyl moiety for its part may optionally be mono- to tetrasubstituted by identical or different substituents from the group consisting of fluorine, chlorine, bromine, iodine,  $C_1$ - $C_4$ -alkyl and  $C_1$ - $C_4$ -haloalkyl,
- $Z^4$  represents  $C_2$ - $C_{20}$ -alkenyl or  $C_2$ - $C_{20}$ -alkynyl, each of which is optionally mono- or polysubstituted by identical or different substituents from the group consisting of fluorine, chlorine, bromine, iodine,  $C_1$ - $C_6$ -alkylthio,  $C_1$ - $C_6$ -alkylsulphanyl,  $C_1$ - $C_6$ -alkylsulphonyl,  $C_1$ - $C_6$ -alkoxy,  $C_1$ - $C_6$ -alkylamino, di( $C_1$ - $C_6$ -alkyl)amino,  $C_1$ - $C_6$ -haloalkylthio,  $C_1$ - $C_6$ -haloalkylsulphanyl,  $C_1$ - $C_6$ -haloalkylsulphonyl,  $C_1$ - $C_6$ -haloalkoxy,  $C_1$ - $C_6$ -haloalkylamino, halo-di( $C_1$ - $C_6$ -alkyl)amino,  $-SiR^8R^9R^{10}$  and  $C_3$ - $C_6$ -cycloalkyl, where the cycloalkyl moiety for its part may optionally be mono- to tetrasubstituted by identical or different substituents from the group consisting of fluorine, chlorine, bromine, iodine,  $C_1$ - $C_4$ -alkyl and  $C_1$ - $C_4$ -haloalkyl,
- $R^8$  and  $R^9$  independently of one another represent  $C_1$ - $C_6$ -alkyl,  $C_1$ - $C_6$ -alkoxy,  $C_1$ - $C_3$ -alkoxy- $C_1$ - $C_3$ -alkyl or  $C_1$ - $C_3$ -alkylthio- $C_1$ - $C_3$ -alkyl,
- $R^{10}$  represents  $C_1$ - $C_6$ -alkyl,  $C_1$ - $C_6$ -alkoxy,  $C_1$ - $C_3$ -alkoxy- $C_1$ - $C_3$ -alkyl,  $C_1$ - $C_3$ -alkylthio- $C_1$ - $C_3$ -alkyl,  $C_3$ - $C_6$ -cycloalkyl, phenyl or benzyl,
- or
- M and Z together represent 1,1,3-trimethyl-1H-2,3-dihydroinden-4-yl, 1,3-dimethyl-1H-2,3-dihydroinden-4-yl, 1,1,3-trimethyl-1,3-dihydro-2-benzofuran-4-yl, 1,3-dimethyl-1,3-dihydro-2-benzofuran-4-yl, 1,1,3-trimethyl-1,3-dihydro-2-benzothien-4-yl or 1,3-dimethyl-1,3-dihydro-2-benzothien-4-yl.

3. Process for preparing the 2-halofuryl/thienyl-3-carboxamides of the formula (I) according to Claim 1, characterized in that

a) carboxylic acid derivatives of the formula (II)



in which

A and Hal are as defined in Claim 1 and

X¹ represents halogen or hydroxyl

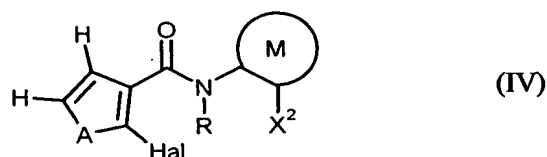
are reacted with aniline derivatives of the formula (III)



in which R, M and Z are as defined in Claim 1,

if appropriate in the presence of a catalyst, if appropriate in the presence of a condensing agent, if appropriate in the presence of an acid binder and if appropriate in the presence of a diluent, or

b) halocarboxamides of the formula (IV)

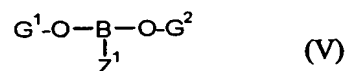


in which

A, Hal, R and M are as defined in Claim 1,

X² represents bromine, iodine or trifluoromethylsulphonate,

are reacted with boronic acid derivatives of the formula (V)



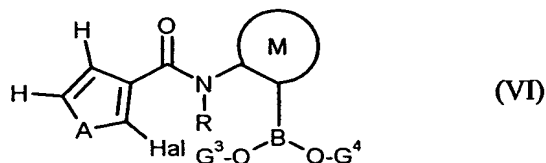
in which

Z¹ is as defined in Claim 1 and

G¹ and G² each represent hydrogen or together represent tetramethylethylene,

in the presence of a catalyst, if appropriate in the presence of an acid binder and if appropriate in the presence of a diluent, or

c) boronic acid derivatives of the formula (VI)



in which

A, Hal, R and M are as defined in Claim 1,

G<sup>3</sup> and G<sup>4</sup> each represent hydrogen or together represent tetramethylethylene

are reacted with phenyl derivatives of the formula (VII)



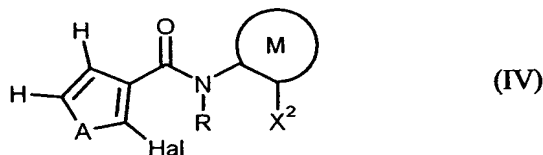
in which

Z<sup>1</sup> is as defined in Claim 1 and

X<sup>3</sup> represents chlorine, bromine, iodine or trifluoromethylsulphonate,

if appropriate in the presence of a catalyst, if appropriate in the presence of an acid binder and if appropriate in the presence of a diluent, or

d) halocarboxamides of the formula (IV)



in which

A, Hal, R and M are as defined in Claim 1,

X<sup>2</sup> represents bromine, iodine or trifluoromethylsulphonate,

are reacted with phenyl derivatives of the formula (VII)



in which

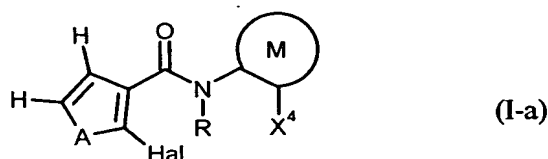
Z<sup>1</sup> is as defined in Claim 1 and

X<sup>3</sup> represents chlorine, bromine, iodine or trifluoromethylsulphonate,

in the presence of a palladium or nickel catalyst and in the presence of 4,4,4',4',5,5,5',5'-octamethyl-2,2'-bis-1,3,2-dioxaborolane, if appropriate in the presence of an acid binder and if appropriate in the presence of a diluent, or

e) 2-halofuryl/thienyl-3-carboxamides of the formula (I-a)





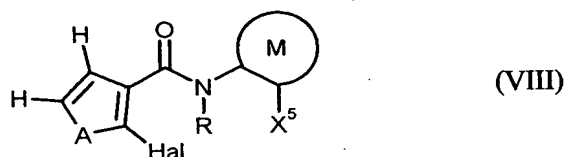
in which

A, Hal, R and M are as defined in Claim 1,

$X^4$  represents  $C_2$ - $C_{20}$ -alkenyl or  $C_2$ - $C_{20}$ -alkynyl which are in each case optionally mono- or polysubstituted by identical or different substituents from the group consisting of halogen, alkylthio, alkylsulphinyl, alkylsulphonyl, alkoxy, alkylamino, dialkylamino, haloalkylthio, haloalkylsulphinyl, haloalkylsulphonyl, haloalkoxy, haloalkylamino, halodialkylamino,  $-SiR^8R^9R^{10}$  and  $C_3$ - $C_6$ -cycloalkyl, where the cycloalkyl moiety for its part may optionally be substituted by halogen and/or  $C_1$ - $C_4$  alkyl,

are hydrogenated, if appropriate in the presence of a diluent and if appropriate in the presence of a catalyst, or

f) hydroxyalkylcarboxamides of the formula (VIII)



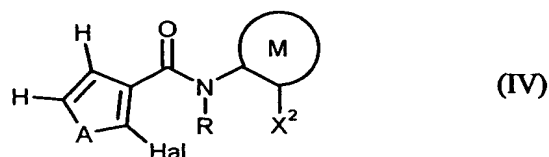
in which

A, Hal, R and M are as defined in Claim 1,

$X^5$  represents  $C_2$ - $C_{20}$ -hydroxyalkyl which is optionally additionally mono- or polysubstituted by identical or different substituents from the group consisting of halogen, alkylthio, alkylsulphinyl, alkylsulphonyl, alkoxy, alkylamino, dialkylamino, haloalkylthio, haloalkylsulphinyl, haloalkylsulphonyl, haloalkoxy, haloalkylamino, halodialkylamino,  $-SiR^8R^9R^{10}$  and  $C_3$ - $C_6$ -cycloalkyl, where the cycloalkyl moiety for its part may optionally be substituted by halogen and/or  $C_1$ - $C_4$ -alkyl,

are dehydrated, if appropriate in the presence of a diluent and if appropriate in the presence of an acid, or

g) halocarboxamides of the formula (IV)



in which

A, Hal, R and M are as defined in Claim 1,

$X^2$  represents bromine, iodine or trifluoromethylsulphonate,

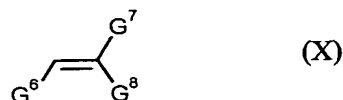
are reacted with an alkyne of the formula (IX)



in which

$G^5$  represents  $C_2$ - $C_{18}$ -alkyl which is optionally mono- or polysubstituted by identical or different substituents from the group consisting of halogen, alkylthio, alkylsulphinyl, alkylsulphonyl, alkoxy, alkylamino, dialkylamino, haloalkylthio, haloalkylsulphinyl, haloalkylsulphonyl, haloalkoxy, haloalkylamino, halodialkylamino,  $-\text{SiR}^8\text{R}^9\text{R}^{10}$  and  $C_3$ - $C_6$ -cycloalkyl, where the cycloalkyl moiety for its part may optionally be substituted by halogen and/or  $C_1$ - $C_4$ -alkyl,

or an alkene of the formula (X)

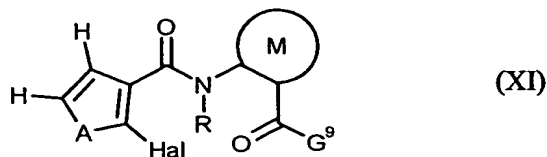


in which

$G^6$ ,  $G^7$  and  $G^8$  independently of one another each represent hydrogen or alkyl which is optionally mono- or polysubstituted by identical or different substituents from the group consisting of halogen, alkylthio, alkylsulphinyl, alkylsulphonyl, alkoxy, alkylamino, dialkylamino, haloalkylthio, haloalkylsulphinyl, haloalkylsulphonyl, haloalkoxy, haloalkylamino, halodialkylamino,  $-\text{SiR}^8\text{R}^9\text{R}^{10}$  and  $C_3$ - $C_6$ -cycloalkyl, where the cycloalkyl moiety for its part may optionally be substituted by halogen and/or  $C_1$ - $C_4$ -alkyl and the total number of carbon atoms of the open-chain molecular moiety (without substituents) does not exceed the number 20,

if appropriate in the presence of a diluent, if appropriate in the presence of an acid binder and if appropriate in the presence of one or more catalysts, or

h) ketones of the formula (XI)



in which

A, Hal, R and M are as-defined in Claim 1,

$G^9$  represents hydrogen or  $C_1$ - $C_{18}$ -alkyl which is optionally mono- or polysubstituted by identical or different substituents from the group consisting of halogen, alkylthio, alkylsulphinyl, alkylsulphonyl, alkoxy, alkylamino, dialkylamino, haloalkylthio, haloalkylsulphinyl, haloalkylsulphonyl, haloalkoxy, haloalkylamino, halodialkylamino,  $-SiR^8R^9R^{10}$  and  $C_3$ - $C_6$ -cycloalkyl, where the cycloalkyl moiety for its part may optionally be substituted by halogen and/or  $C_1$ - $C_4$ -alkyl,

are reacted with a phosphorus compound of the general formula (XII)



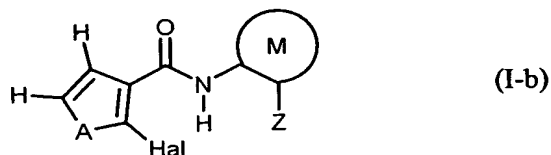
in which

$G^{10}$  represents  $C_1$ - $C_{18}$ -alkyl which is optionally mono- or polysubstituted by identical or different substituents from the group consisting of halogen, alkylthio, alkylsulphinyl, alkylsulphonyl, alkoxy, alkylamino, dialkylamino, haloalkylthio, haloalkylsulphinyl, haloalkylsulphonyl, haloalkoxy, haloalkylamino, halodialkylamino,  $-SiR^8R^9R^{10}$  and  $C_3$ - $C_6$ -cycloalkyl, where the cycloalkyl moiety for its part may optionally be substituted by halogen and/or  $C_1$ - $C_4$ -alkyl,

$P_x$  represents a grouping  $-P^+(C_6H_5)_3$ ,  $Cl^-$ ,  $-P^+(C_6H_5)_3$ ,  $Br^-$ ,  $-P^+(C_6H_5)_3$ ,  $I^-$ ,  $-P(=O)(OCH_3)_3$  or  $-P(=O)(OC_2H_5)_3$ ,

if appropriate in the presence of a diluent, or

i) 2-halofuryl/thienyl-3-carboxamides of the formula (I-b)



in which

A, Hal, R, M and Z are as defined in Claim 1

are reacted with halides of the formula (XIII)



in which

- 5  $R^a$  represents  $C_1$ - $C_8$ -alkyl,  $C_1$ - $C_6$ -alkylsulphinyl,  $C_1$ - $C_6$ -alkylsulphonyl,  $C_1$ - $C_4$ -alkoxy- $C_1$ - $C_4$ -alkyl,  $C_3$ - $C_8$ -cycloalkyl;  $C_1$ - $C_6$ -haloalkyl,  $C_1$ - $C_4$ -haloalkylthio,  $C_1$ - $C_4$ -haloalkylsulphinyl,  $C_1$ - $C_4$ -haloalkylsulphonyl, halo- $C_1$ - $C_4$ -alkoxy- $C_1$ - $C_4$ -alkyl,  $C_3$ - $C_8$ -halocycloalkyl having in each case 1 to 9 fluorine, chlorine and/or bromine atoms; formyl, formyl- $C_1$ - $C_3$ -alkyl, ( $C_1$ - $C_3$ -alkyl)carbonyl- $C_1$ - $C_3$ -alkyl, ( $C_1$ - $C_3$ -alkoxy)carbonyl- $C_1$ - $C_3$ -alkyl; halo-( $C_1$ - $C_3$ -alkyl)carbonyl- $C_1$ - $C_3$ -alkyl, halo-( $C_1$ - $C_3$ -alkoxy)carbonyl- $C_1$ - $C_3$ -alkyl having in each case 1 to 13 fluorine, chlorine and/or bromine atoms; ( $C_1$ - $C_8$ -alkyl)carbonyl, ( $C_1$ - $C_8$ -alkoxy)carbonyl, ( $C_1$ - $C_4$ -alkoxy- $C_1$ - $C_4$ -alkyl)-carbonyl, ( $C_3$ - $C_8$ -cycloalkyl)carbonyl; ( $C_1$ - $C_6$ -haloalkyl)carbonyl, ( $C_1$ - $C_6$ -haloalkoxy)carbonyl, (halo- $C_1$ - $C_4$ -alkoxy- $C_1$ - $C_4$ -alkyl)carbonyl, ( $C_3$ - $C_8$ -halocycloalkyl)carbonyl having in each case 1 to 9 fluorine, chlorine and/or bromine atoms; or  $-C(=O)C(=O)R^1$ ,  $-CONR^2R^3$  or  $-CH_2NR^4R^5$ ,

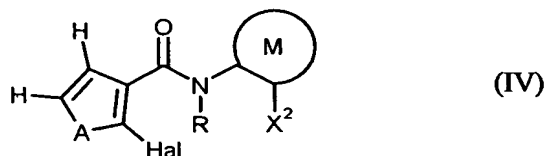
$R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$  and  $R^5$  are as defined above,

$X^6$  represents chlorine, bromine or iodine,

20 in the presence of a base and in the presence of a diluent.

4. Compositions for controlling unwanted microorganisms, characterized in that they comprise at least one 2-halofuryl/thienyl-3-carboxamide of the formula (I) according to Claim 1, in addition to extenders and/or surfactants.
- 25 5. Use of 2-halofuryl/thienyl-3-carboxamides of the formula (I) according to Claim 1 for controlling unwanted microorganisms.
6. Method for controlling unwanted microorganisms, characterized in that 2-halofuryl/thienyl-3-carboxamides of the formula (I) according to Claim 1 are applied to the microorganisms and/or their habitat.
- 30 7. Process for preparing compositions for controlling unwanted microorganisms, characterized in that 2-halofuryl/thienyl-3-carboxamides of the formula (I) according to Claim 1 are mixed with extenders and/or surfactants.
- 35

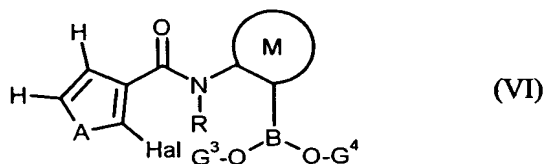
## 8. Halocarboxamides of the formula (IV)



in which

- 5      A, Hal, R and M are as defined in Claim 1,  
        $X^2$  represents bromine or iodine.

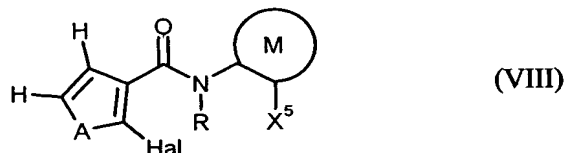
## 9. Boronic acid derivatives of the formula (VI)



in which

- 10      A, Hal, R and M are as defined in Claim 1,  
        $G^3$  and  $G^4$  each represent hydrogen or together represent tetramethylethylene.

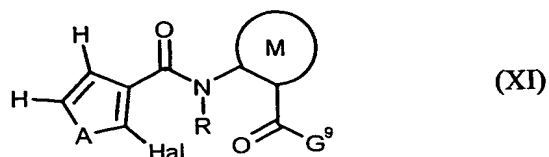
## 10. Hydroxyalkylcarboxamides of the formula (VIII)



in which

- 15      A, Hal, R and M are as defined in Claim 1,  
        $X^5$  represents  $C_2$ - $C_{20}$ -hydroxyalkyl which is optionally additionally mono- or  
       polysubstituted by identical or different substituents from the group consisting of  
       halogen, alkylthio, alkylsulphinyl, alkylsulphonyl, alkoxy, alkylamino, dialkylamino,  
       haloalkylthio, haloalkylsulphinyl, haloalkylsulphonyl, haloalkoxy, haloalkylamino,  
       halodialkylamino,  $-SiR^8R^9R^{10}$  and/or  $C_3$ - $C_6$ -cycloalkyl, where the cycloalkyl moiety  
       for its part may optionally be substituted by halogen and/or  $C_1$ - $C_4$ -alkyl.

## 25    11. Ketones of the formula (XI)



in which

A, Hal, R and M are as defined in Claim 1,

$G^9$  represents hydrogen or represents  $C_1$ - $C_{18}$ -alkyl which is optionally mono- or polysubstituted by identical or different substituents from the group consisting of halogen, alkylthio, alkylsulphinyl, alkylsulphonyl, alkoxy, alkylamino, dialkylamino, haloalkylthio, haloalkylsulphinyl, haloalkylsulphonyl, haloalkoxy, haloalkylamino, halodialkylamino,  $-SiR^8R^9R^{10}$  and  $C_3$ - $C_6$ -cycloalkyl, where the cycloalkyl moiety for its part may optionally be substituted by halogen and/or  $C_1$ - $C_4$ -alkyl.